Murata Power Solutions

VR102B150CS-2C

Programmable, 150A Single Output DC/DC Converter

FEATURES

- Meets VRM 10.1 and VRM 10.2 Requirements
- DAC Programmable Output Voltage
- Power Good Output
- Differential Remote Sense
- Remote Enable
- Supervisory Functions
  - Output Overcurrent
  - Short Circuit Protection
  - Overtemperature Indicator
  - Output Current Level Signal
- Tri-state Output when Disabled
- Dynamic VID Capability

SELECTION GUIDE

Order Code	Input Voltage	Output Voltage	Output Current	Efficiency
	V (NOM.)	V	A	% (TYP.)
VR102B150CS-2C	12	0.8375 - 1.600	150	85

INPUT CHARACTERISTICS

Parameter	Conditions[1]	MIN.	TYP.	MAX.	Units
Input voltage operating range		11.4	12.0	12.60	V
Under voltage lockout	Turn-on threshold	9.7		11.0	V
	Turn-off threshold	9.0		10.3	V
	Hysteresis voltage	0.7		1.0	V
Maximum input current	Typical: 130A 1.325VID		19		A
	Max: 150A 1.6VID			22	A
No-load input current	Enable state, no load	200	320	400	mA
Disabled input current	Disabled state	20	30	50	mA
Enable - positive logic	On state range	0.8		5.0	V
	Off state range	-0.3		0.4	V

OUTPUT CHARACTERISTICS

Parameter	Conditions[1]	MIN.	TYP.	MAX.	Units
Voltage set point	6-Bit DAC controlled	0.8375		1.600	
Line regulation		-5	0	5	mV
Load regulation			1.25		mΩ
Voltage total regulation				VID-40	mV
Ripple & noise[2]	20MHz bandwidth		6.4		mVp-p
Current operating range		0		150	A
Efficiency	Io = 130 Amps VID = 1.325	83	85		%
Turn-on time	V_{IN} present: enable to 90% V_{OUT}			50	mS
Transient Response[3]	100A step, 100A/µS, ΔVo	115		135	
Remote Sense Compensation Range[4]				300	
Recommended bulk output capacitance	UCC 4PS560MH11 or equivalent		14		EA

GENERAL CHARACTERISTICS

Parameter	Conditions[1]	MIN.	TYP.	MAX.	Units
Semiconductor junction temperature	Package rated to 150ºC			110	ºC
Material flammability	UL 94V-0				
MTBF	Calculated (RAC PRISM) @ 45°C		1.22		x10^6 Hrs
Switching frequency	Per phase		300		KHz
Dimensions	3.8"L x 2.5"H x 0.870"W				
Weight			103		g

TEMPERATURE CHARACTERISTICS

Parameter	Conditions[1]	MIN.	TYP.	MAX.	Units
Storage temperature range	Non-condensing	-40		70	ºC
Operating temperature range	See derating graph	0		60	ºC

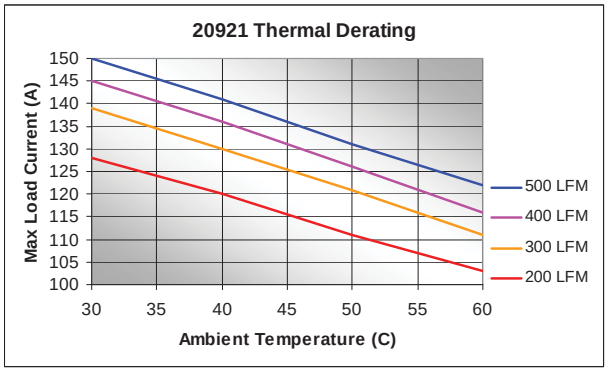
RoHS COMPLIANT 2002/95/EC

For full details go to www.murata-ps.com/rohs

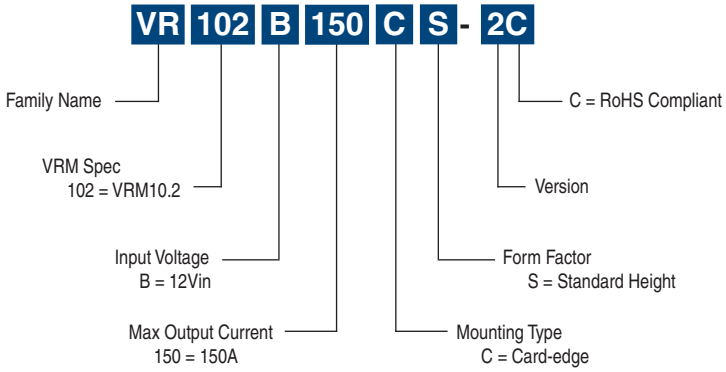
PROTECTION CHARACTERISTICS					
Parameter	Conditions[1]	MIN.	TYP.	MAX.	Units
Output overcurrent shutdown	Latching	155		205	A
Overvoltage Shutdown	Above VID	90		200	mV
Overtemperature Indicator	Non-Latching, at hot spots Worst case junction temperature		135		°C
Load Indicator	VID = 1.325, 0 A Load VID = 1.325, 100 A Load VID = 1.325, 150A Load		0 2 3		V

1. Vin = 12Vdc, Ta = 25°C, Airflow = 400LFM unless otherwise noted.
2. Output Ripple Voltage is specified when measured with Intel specified capacitance at the output of the converter.
3. Transient response is specified with Intel specified capacitors at the output of the converter.
4. If remote sense is not required or used, the Sense(+) and Sense(-) pins must be connected to Vo(+) and Vo(-) respectively.
5. VRM_PRES and VRM_ID are connected to Vss on the VRM.

THERMAL DERATING GRAPH

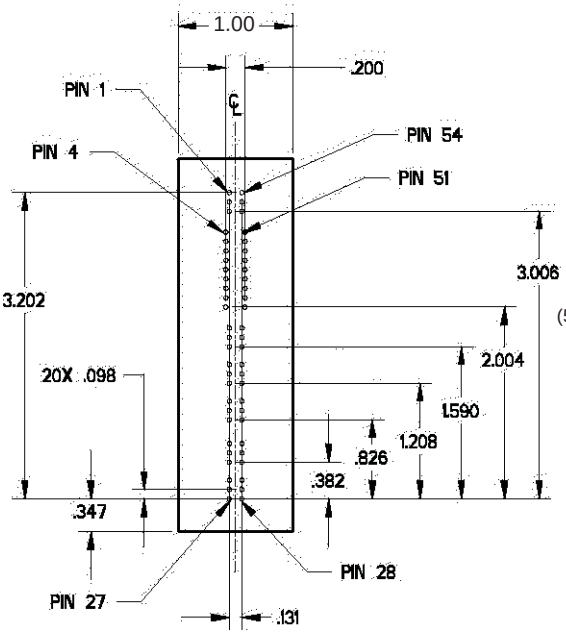


PART NUMBER CODING



PIN ASSIGNMENT

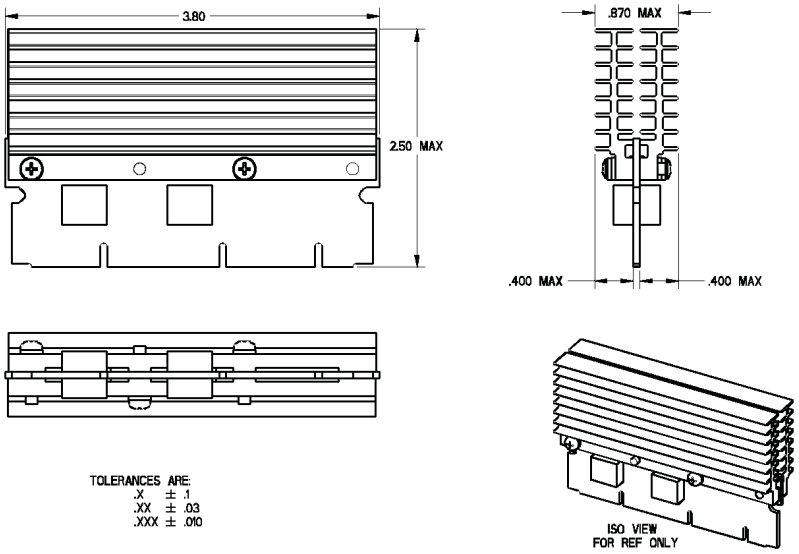
	1	VSS
	2	VSS
	3	VSS
	4	VID4
	5	VID2
	6	VID0
	7	Vo_sen+
	8	PWRGD
	9	OUTEN
	10	Load Current
	11	VRM ID
(5)	12	VRM_Pres
	13	VO+
	14	VO+
	15	VO+
	16	VSS
	17	VSS
	18	VSS
	19	VO+
	20	VO+
	21	VO+
	22	VSS
	23	VSS
	24	VSS
	25	VO+
	26	VO+
	27	VO+



NOTE:
CHECK WITH MANUFACTURER FOR RECOMMENDED PCB LAYOUT.

	54	VIN+
	53	VIN+
	52	VIN+
	51	VID3
	50	VID1
	49	VID5
	48	VO_SEN-
	47	VR_HOT
	46	LL0
	45	LL1
	44	N/C
(5)	43	N/C
	42	VO+
	41	VO+
	40	VO+
	39	VSS
	38	VSS
	37	VSS
	36	VO+
	35	VO+
	34	VO+
	33	VSS
	32	VSS
	31	VSS
	30	VO+
	29	VO+
	28	VO+

MECHANICAL DIMENSIONS



Recommended Interface Connector Options
Tyco/Elcon 283-0172-01303 (Solder Tail, Long)
283-0172-02303 (Solder Tail, Short)
284-0202-03003 (Surface Mount)

RoHS Compliancy

The VR102B150CS-2C is in compliance with the European Union Directive 2002/95/EC (RoHS) with respect to the following substances: lead (Pb), cadmium (Cd), mercury (Hg), hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).

RoHS Process Note

This product is not intended to go through a reflow solder process. See recommended interface connector options.

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ISO 9001 and 14001 REGISTERED